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Diatoms (Bacillariophyceae) from Alaska.

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Abstract

This paper is the result of a study of the diatom collections from Alaska. A total of 270 samples were collected from various localities, from June to July 1988. One hundred and twenty six taxa were identified in the vicinity of Point Barrow. Among them taxa, the main dominant genera, in terms of number of taxa encountered, were *Navicula* (26), *Cymbella* (11), *Achnanthes* (8), *Nitzschia* (8) and *Pinnularia* (7).

Introduction

Until 1960, there was very little information about the freshwater diatom flora of Alaska. Saunders (1904) mentioned 72 diatom taxa belonging to 31 genera from southernmost Alaska, and from Lake Karluk in Kodiak Island. Lowe (1923) mentioned 87 taxa belonging to 29 genera from the arctic North America; among the former only 14 taxa were mentioned from eastern Alaska near the north coast. In Lake Karluk, Hilliard (1959) reported 166 taxa, identified by E. Manguin. Manguin (1960) once more treated the diatom flora of Lake Karluk and mentioned a total of 82 taxa. Among them there 33 taxa described as new species, 19 as new varieties and 3 as new formae. In 1961, by the research of Patrick and Freese (1961), the knowledge of the diatom flora

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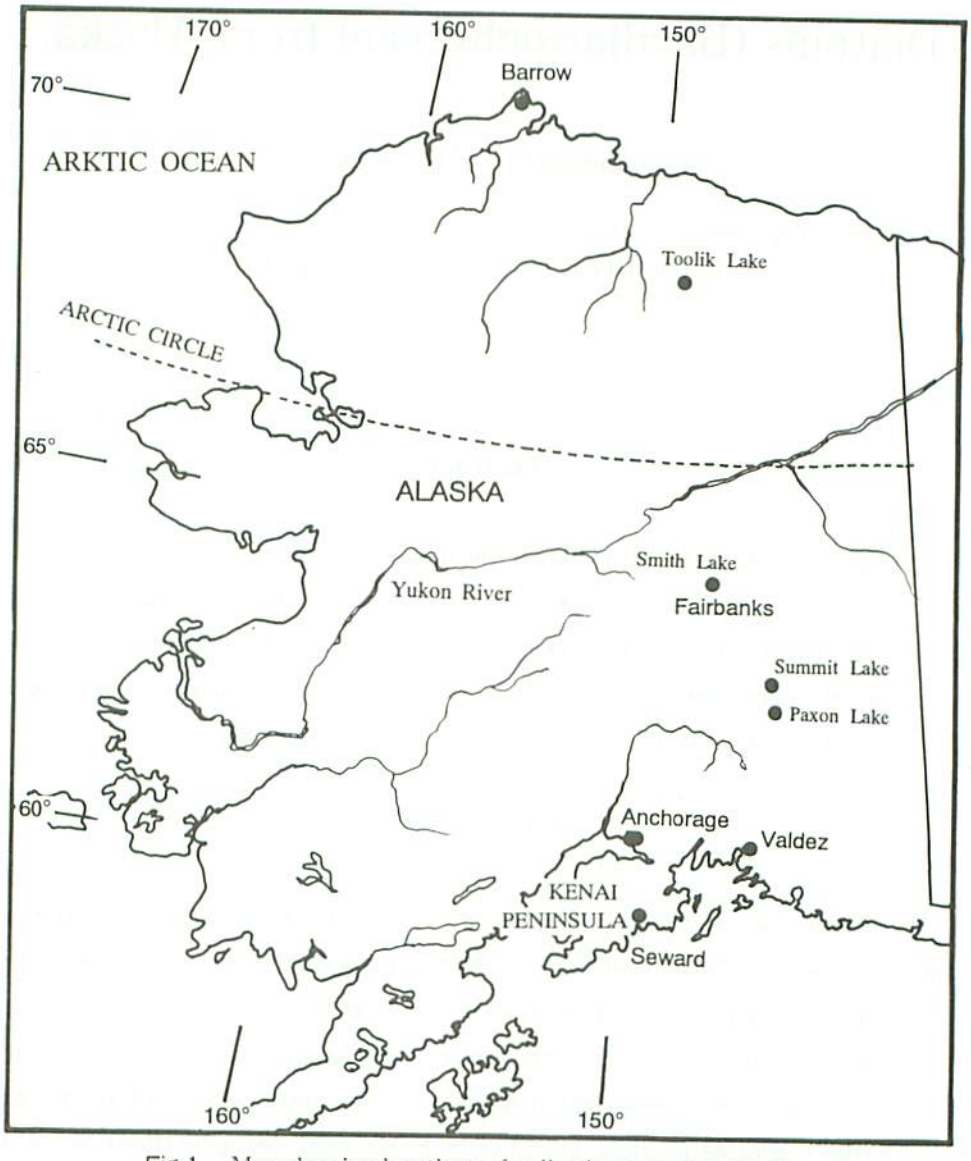

Fig.1. Map showing locations of collecting samples, Alaska.

of arctic Alaska increased considerably, as the paper dealt with 479 taxa belonging to 41 genera, and among them 86 new taxa. Foged (1968, 1971) also studied diatom flora, and described many new taxa. Recently, Foged (1981) once more treated the diatom flora in Alaska, collected from 218 localities in 1960 and 1963. Ko-Bayasi and Hagihara (1971) and Ko-Bayasi and Kishimoto (1972) studied diatom flora in Arctic

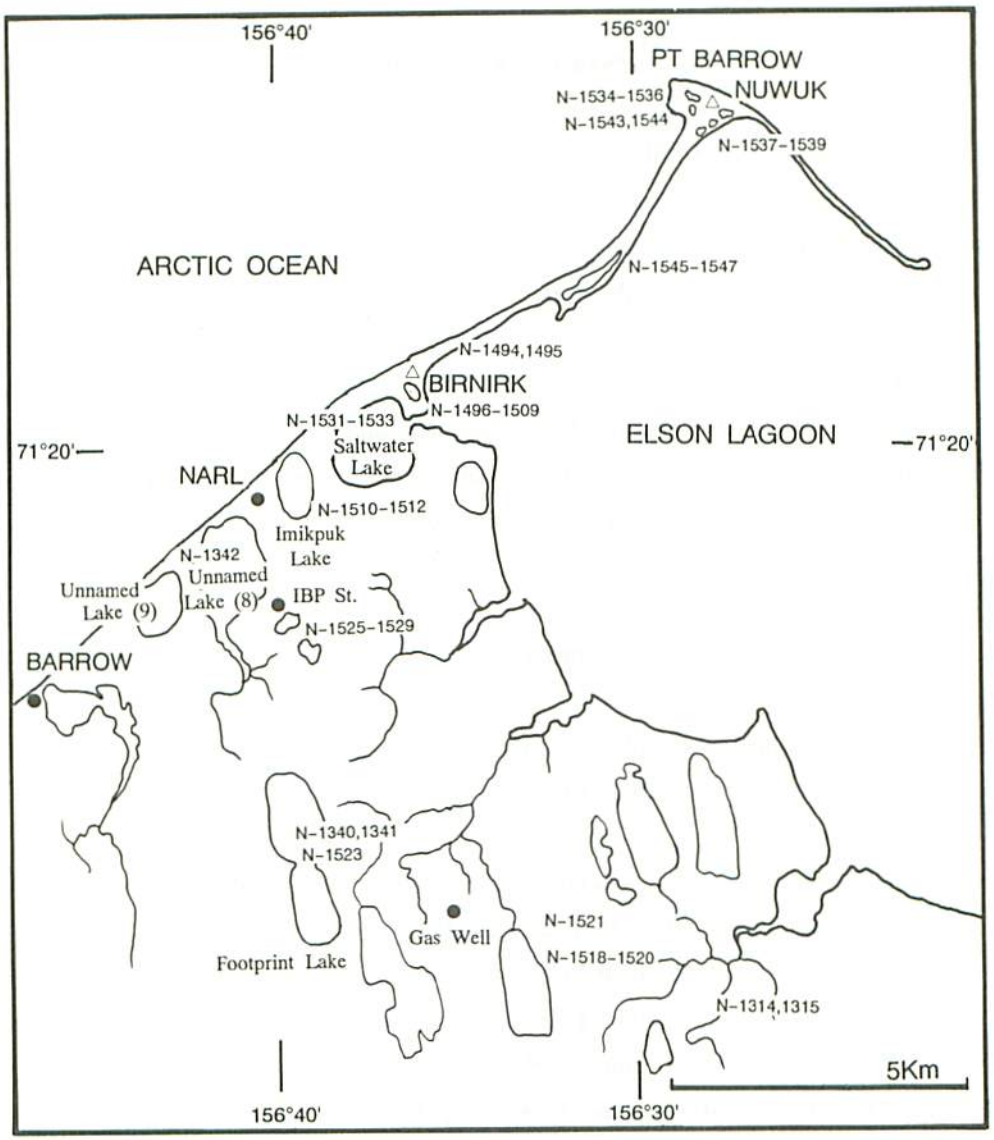

Fig.2. Detailed map showing sampling points in the vicinity of Barrow, Alaska.

Alaska, however, they showed just the sampling points and dominant species of diatom. Notwithstanding, all authors mentioned above, merely studied at the light microscopical level. For this reason, the principal aim of this work was to study the diatom flora from Alaska using electron microscopical observations in order to improve the taxonomical knowledge.

Materials and Methods

In this research, a total of 270 samples were collected from Alaska (Fig. 1). Particularly many samples were collected in the vicinity of Barrow (Fig. 2). In this study as diverse habitats as possible were sampled, as for example, pools, lakes, lagoons, streams, and moss. All water habitats, fresh, brackish and marine water habitats were made.

Methods of cleaning, washing and preparation for light and electron microscopy are given in Kobayasi & Nagumo (1985). Chemical analyses of water from several of the samples were made. However, due to lack of time these analyses to a relatively few habitats of total collected. Chemical data of waters in main localities are please refer to Satoh *et al.* (1992).

List of collected localities and samples.

The list of collected samples (N-xxxx; Sample No.) is given below with short comments for collected localities (June 15 - July 26, 1988).

N-1300; Fairbanks, Smith Lake. June 15,'88. Squeezing from an algae-moss in shallow water at edge of the lake. W.T. 22.0°C. pH 8.3. Salinity 0.00%.

N-1301; Fairbanks, Smith L. June 15,'88. *ibid.* but slightly different site.

N-1302; Fairbanks, Smith L. June 15,'88. *ibid.* but slightly different site.

N-1303; Fairbanks, Smith L. June 17,'88. Sphagnum Moss.

N-1304; Fairbanks, Smith L. June 17,'88. Epiphytes on higher plant leaves. Genus *Bulbocheate*.

N-1305; Fairbanks, Smith L. June 17,'88. Little pond in a forest.

N-1306; Fairbanks, Ballein L. June 17,'88. Pipetted from bottom sediments.

N-1307; Fairbanks, Ballein L. June 17,'88.

N-1308; Fairbanks, Smith L. June 20,'88. Bottom sediments at the center.

N-1309; Fairbanks, Smith L. June 20,'88. Pipetted from shallow muddy island at the center.

N-1310; Fairbanks, Smith L. June 20,'88. Little pond in a forest, near Smith L.,

N-1311; Fairbanks, Smith L. June 20,'88.

N-1312; Barrow, Elson Lagoon. June 22,'88. Pipetted from sandy bottom.

N-1313; Barrow, Marine. June 22,'88. Pipetted from sandy bottom sediments covered by thick ice.

N-1314; Barrow, Net sample corrected from marine. June 22,'88.

N-1315; Barrow, Elson L. Small pond. June 22,'88. Macro green algae. *Enteromorpha.*

N-1316; Barrow, Small pond. June 22,'88. Pipetted from bottom sediments. *Pinnularia.*

N-1317; Barrow, Small pond, June 22,'88. Pipetted from bottom sediments. Numerous Dinofragillates.

N-1318; Barrow, Saltwater Lake. June 22,'88. Pipetted from bottom sediments. Diatom genus *Gyrosigma, Mastogloia.*

N-1319; Barrow, Saltwater L. June 22,'88. Pipetted from bottom sediments under ice field. *Navicula, Gyrosigma.*

N-1320; Barrow, Saltwater L. June 22,'88. Reddish snow on ice.

N-1321; Barrow, Imikupuk L. June 22,'88. Squeezings of filamentous blue-green algae, numerous diatoms.

N-1322; Barrow, Imikupuk L. June 22,'88. Pipetted from bottom sediments at the lake edge.

N-1323; Barrow, Imikupuk L. June 22,'88. Squeezings of *Cladophora.*

N-1325; Barrow, Tasigarook L. June 22,'88. Pipetted from bottom sediments. Salinity 0.05%.

N-1326; Barrow, Tundra pond. June 22,'88. Pipetted from bottom sediments. Salinity 0.05%.

N-1328; Barrow, Tundra pond (1). June 23,'88. Sediments. *Pinnularia.*

N-1329; Barrow, Tundra pond. June 23,'88. Scums.

N-1330; Barrow, Tundra pond. June 23,'88. Pipetted from bottom sediments. *Pinnularia. Navicula.*

N-1331; Barrow, Tundra pond. June 23,'88. Squeezings off filamentous algae, numerous diatoms. *Pinnularia, Eunotia.*

N-1332; Barrow, Tundra pond. June 23,'88. Squeezings off bottom sediments. *Pinnularia,* Desmids(*Penium*).

N-1333; Barrow, Tundra pond St. 2. June 23,'88. Squeezings off bottom sediments. *Stauroneis, Navicula, Cymbella*, Desmids(*Closterium*).

N-1334; Barrow, Tundra Pond. St. 3. Near a G.W. June 23,'88. Numerous diatoms. *Navicula, Nitzschia, Fragiralia, Ochromonas, Chlamidomonas*.

N-1335; Barrow, Tundra Pond St.3. Near a G.W. June 23,'88. *Navicula, Ulothrix*.

N-1336; Barrow, Tundra Foot Print L. June 23,'88. Pipetted from bottom sediments.

N-1337; Barrow, Tundra IBP St. June 23,'88. Pipetted from bottom sediments. *Pinnularia, Navicula, Nitzschia*.

N-1338; Barrow, Tundra IBP St. June 23,'88. Squeezings off scums. *Pinnularia, Navicula, Stauroneis*.

N-1339 ; Barrow, Tundra IBP St. Little pond. June 23,'88. *Euglena, Tracheromonas*.

N-1340; Barrow, Tundra Foot Print L. Center, Core sample. Corrected by Dr. M. Perterson, Dept. of Biol. Sci. Clemson Univ. June 23,'88.

N-1341; Barrow, Tundra Foot Print L. Edge of Lake. Core sample corrected by Dr. M. Perterson. June 23,'88.

N-1342; Barrow, Unnamed No. 8 L. June 23,'88. Pipetted from bottom sediments.

N-1343; Barrow, NARL. Little pond, back of the NARL. June 23,'88. *Zygnema, Euglena*.

N-1344; Barrow, NARL. Soil sample. back of the NARL. June 23,'88. *Euglena*.

N-1345; Barrow, NARL. Little pond. June 23,'88. *Closterium, Euglena*.

N-1346; Paxson L. Little pond. Pipetted from bottom sediments. June 26,'88.

N-1347; Paxson L. Little pond, squeezing of scum. June 26,'88.

N-1348; Paxson L. June 26,'88. *Chara*.

N-1349; Pippin L. June 27,'88. W.T. 13.3°C, pH 8.36.

N-1350; Pippin L. June 27,'88.

N-1351; Valdez, before 70Mail pond. June 27,'88. W.T. 12.2°C, pH 7.9. *Ulothrix*.

N-1352; Tompson Pass, Pond. Pipeted off sediments. June 27,'88. *Diatoma*.

N-1353; Tompson Pass, a glacier pond. Pipetted from bottom sediments. June 27,'88.

N-1354; Tompson Pass, A glacier pond. Moss. June 27,'88.

N-1355; Tompson Pass, A sphagnum bog. June 27,'88. *Stauroneis, Navicula*, Desmids.

N-1356; Valdez, Swamp. June 27,'88. Pipetted from muds.

N-1357; Valdez, Swamp. June 27,'88. *Vaucheria*.

N-1358; Valdez, Swamp. June 27,'88. *Synedra, Chara.*

N-1359; Valdez, Swamp. June 27,'88. *Chara.*

N-1360; Valdez, Marine. June 27,'88. Epilithic. W.T. 1.7°C, pH 8.2, Salinity 0.9%.

N-1361; Valdez, Marine. June 27,'88. West side.

N-1362; Valdez, West side swamp. June 27,'88. *Amphora.*

N-1363; Valdez, West side swamp. June 27,'88. *Amphora.*

N-1364; Valdez, Lake. Just under the View point. June 27,'88. W.T. 16.8°C, pH 6.8. Pipetted from bottom sediments.

N-1365; Seward, Marine. June 28,'88. Epilithic. *Diatoma.*

N-1366; Seward, Marine. June 28,'88. Epilithic. *Licmophora.*

N-1367; Seward, Marine. June 28,'88. Epilithic.

N-1368; Seward, Marine. June 28,'88. Salt marsh.

N-1369; Kenai L. About middle site. June 29,'88. Pipetted from sediments from the shore. W.T. 7.0°C, pH 7.13.

N-1370; Kenai L. About middle site. June 29,'88. *Asterionella.*

N-1371; Lower Trail L. Lower stream region. June 29,'88. Pipetted from substrates. W.T. 11.3°C, pH 7.24. *Amphora, Synedra.*

N-1372; Lower Trail L. Lower stream regions. June 29,'88. Epiphytic sample. W.T. 11.3°C, pH 7.24. *Amphora, Cymbella.*

N-1373; Lower Trail L. Sphagnum bog. June 29,'88.

N-1374; Up Trail L. June 29,'88. Pipetted from sediments. W.T. 11.0°C, pH 6.5. *Tabellaria, Amphora.*

N-1375; Tern L. June 29,'88. Pipetted from sediments. W.T. 10.4°C, pH 7.24.

N-1376; Tern L. June 29,'88. Pipetted from sediments. W.T. 10.4°C, pH 7.24.

N-1377; Tern L. June 29,'88. Pipetted from sediments. Numerous diatoms.

N-1378; Tern L. Sphagunam bog in central little Isl. June 29,'88. Desmids.

N-1379; Kenai L. Lower. June 29,'88. Pipetted from sediments. W.T. 9.3°C, pH 7.3.

N-1380; Kenai L. Lower. June 29,'88.

N-1381; Skilak L. Upper. June 29,'88. Epilithic sample. W.T. 9.5°C, pH 7.52. *Ceratoneis, Synedra, Cymbella.*

N-1382; Skilak L. June 29,'88.

N-1383; Low Ohmer L. June 29,'88. W.T. 14.2°C, pH 8.14. Epiphytics on *Nuphar. Chara.*

N-1384; Low Ohmer L. June 29,'88. Net sample.

N-1385; Soldotna (93.5 mils). June 29,'88. W.T. 13.6°C, pH 5.54.

N-1386; Kenai R. June 29,'88. Pipetted from sediments. *Gyrosigma.*

N-1387; Kenai R. June 29,'88. Mud sample.

N-1388; Kenai R. June 29,'88. *Vaucheria.*

N-1389; Turnagain Arm 1, June 29,'88. Pipetted from sediments. W.T. 4.8°C, pH 6.4, Salinity 0.01%. *Entomoneis.*

N-1390; Turnagain Arm 2. June 29,'88. Pipetted from bottom sediments.

N-1391; Seward, Swamp. June 29,'88. Pipetted from mud surface. *Entomoneis.*

N-1329; Seward, Swamp. June 29,'88.

N-1393; Kenai, Summit L. June 30,'88. Pipetted from mud surface. W.T 11.8°C, pH 7.4, Salinity 0.00%.

N-1394; K. Summit L. June 30,'88. W.T. 11.8°C, pH 7.4, Salinity 0.00%. *Fragilaria.*

N-1395; K. Low Summit L. June 30,'88. Pipetted from bottom sediments. W.T. 7.5°C, pH 6.38, Salinity 0.00%. *Navicula, Caloneis.*

N-1396; K. Low Summit L. June 30,'88. W.T. 7.5°C, pH 6.38, Salinity 0.00%.

N-1397; K. Low Summit L. June 30,'88. Pipetted from mud surface. W.T. 7.5°C, pH 6.38, Salinity 0.00%. *Diploneis, Fragilaria, Vaucheria.*

N-1398; K. Low Summit L. June 30,'88.

N-1399; Portage, Marine. June 30,'88. Mud samples in the bay.

N-1400; Portage. June 30,'88. Epilithic samples in a fall.

N-1401; Portage June 30,'88. Bottom sediments in the basin of a waterfall.

N-1402; Portage(s-91). June 30,'88. Pipetted from mud surface. W.T. 11.8°C, pH 6.5, Salinity 0.72%.

N-1403; Portage(s-104). June 30,'88. Pipetted from mud surface. W.T. 6.6°C, Salinity 0.85%.

N-1404; Portage(s-114). June 30,'88. Pipetted from mud. W.T. 7.0°C, Salinity 0.91%.

N-1405; Potter Marsh. June 30,'88. W.T. 6.7°C, Pipetted from mud in a swamp. *Utricularia.*

N-1406; Potter Marsh. June 30,'88. Pipetted from mud surface. *Vaucheria.*

N-1407; Smith L. July 04,'88. Bottom sediments in the center. W.T. 18.0°C, pH 7.3, Salinity 00.0%.

N-1408; Smith L. July 04,'88. Pipetted from sediments at the edge.

N-1409; Smith L. July 04,'88. Epiphytic.

N-1410; Smith L. July 04,'88. Muds.

N-1411; Smith L. July 04,'88. Surface mud at the shore. *Vaucheria*.

N-1412; Harding L. July 06,'88. Pipetted from sediments. W.T. 18.7°C, pH 7.3, Salinity 00.0%.

N-1413; Harding L. July 06,'88. Blue-green algae.

N-1414; Harding L. July 06,'88. Pipetted from sediments.

N-1415; Birch L. July 06,'88. Net sample. W.T. 18.4°C, pH 7.5. *Asterionella*.

N-1416; Birch L. July 06,'88. Pipetted from bottom sediments.

N-1417; Birch L. July 06,'88.

N-1418; Quartz L. July 06,'88. Pipetted from sediments at the edge. W.T. 19.6°C, pH 8.4, Salinity 00.0%.

N-1419; Donnelly Swamp. July 06,'88. Pipetted from bottom sediments. W.T. 18.6°C, pH 5.8, Salinity 00.0%.

N-1420; Donnelly Park. July 06,'88. Pipetted from sediments. *Pinnularia*.

N-1421; Donnelly Park July 06,'88. Pipetted from bottom sediments in the little stream. Numerous diatoms. *Mougeotia. Pinguiculus*.

N-1422; Donnelly Park. July 06,'88. Pipetted from botom sample.

N-1423; Summit L. July 06,'88. Net samples. W.T. 10.4°C, pH 7.46.

N-1424; Summit L. July 06,'88. Epilithic sample.

N-1425; Summit L. S. July 06,'88.

N-1426; Summit L. S. July 06,'88. Pipetted from bottom sediments.

N-1427; Salmon Creek. July 06,'88. *Vaucheria*.

N-1428; Salmon Creek. July 06,'88. Epilithic. *Dydimosphenia*.

N-1429; Paxson L. July 06,'88. Net sample. W.T. 14.5°C, pH 7.4, Salinity 00.0%. *Stephanodiscus*.

N-1430; Paxson L. July 06,'88. Pipetted from sediments. *Fragilaria*.

N-1431; Paxson L. July 06,'88. Net sample. *Stephanodiscus. Melosira, Epithemia*.

N-1432; Paxson L. July 06,'88.

N-1433; Paxson L. Roadside ditch of wooden lane to the lake. July 06,'88. Pipetted from sediments.

N-1434; Paxson L. Alittle pond, roadside of wooden lane. July 06,'88. *Vaucheria.*

N-1435; Paxson L. River mouse. July 06,'88. Scrapings from river bed stones.

N-1436; Up Tangle L. July 06,'88. W.T. 13.6°C, pH 7.3, Salinity 00.0%.

N-1437; Up Tangle L. Net sample. July 06,'88. *Stephanodiscus.*

N-1438; Up Tangle L. July 06,'88. Pipetted from bottom sediments at the shore.

N-1439; Tangle L. July 06,'88. W.T. 14.1°C, pH 7.11, Salinity 00.0%. *Dydimosphenia, Epithemia.*

N-1440; Tangle L. Net samples. July 06,'88.

N-1441; Tangle L. July 06,'88. Scrapings from bottom sediments. *Synedra, Cymbella, Gomphonema.*

N-1442; Tangle L. July 06,'88. Pipetted from bottom sediments. *Meridion.*

N-1443; Tangle L. July 06,'88. Lake side muds. *Vaucheria.*

N-1444; Tangle L. July 06,'88. Small ditch near the lake.

N-1445; Paxson 18ml L. Roadside small lake. July 06,'88.

N-1446; Paxson 15ml L. Roadside small lake. July 06,'88.

N-1447; Paxson 15ml L. Roadside small lake. July 06,'88. *Vaucheria.*

N-1448; 9mls Pond from Paxson. July 06,'88. W.T. 15.0°C, pH 7.11, Salinity 00.0%.

N-1449; 9mls Pond from Paxson. July 06,'88. Reddish snow.

N-1450; 9mls Pond from Paxson. July 06,'88. Reddish snow.

N-1451; Narrow ditch, 9mls from Paxson. July 06,'88.

N-1452; Bieber Dam. July 06,'88. Pipetted from sediments.

N-1453; Fairbanks, Smith L. July 11,'88. W.T. 20.5°C, pH 7.3, Salinity 00.0%.

N-1454; Fairbanks, Smith L. July 11,'88. W.T. 20.5°C, pH 7.3.

N-1455; Fairbanks, Smith L. July 11,'88. W.T. 20.5°C, pH 7.3.

N-1456; Fairbanks, Smith L. July 11,'88. *Vaucheria.*

N-1457; Fairbanks, Smith L. July 11,'88.

N-1458; George Park HWY 64mls little pond from Fairbanks. July 13,'88. Pipetted from bottom sediments. *Epithemia.*

N-1459; George Park HWY 64mls small pond. July 13,'88.

N-1460; George Park HWY road side. July 13,'88.

N-1461; George Park HWY Denali P. July 13,'88.

N-1462; Finger M. Roardside small pond. July 14,'88. Mud.

N-1463; Dalton HWY 194mls, roardside small pond. July 14,'88. *Neidium, Amphora, Utricularia.*

N-1464; Dalton HWY under the Koyukuku bridge. July 14,'88.

N-1465; Dalton HWY Atigen Pass, July 14,'88. Scrapings from riberbed. *Ceratoneis, Hydorurus.*

N-1466; Dalton HWY Atigen Pass. July 14,'88. Pipetted from bottom sediments. *Cymbella.*

N-1467; Dalton HWY Atigen Pass. July 14,'88. *Ceratoneis.*

N-1468; Dalton HWY Atigen Pass. July 14,'88. *Spirogyra.*

N-1469; Dalton HWY Toolik L., before few mile. July 14,'88. Reddish pond. Pipetted from bottom sediments.

N-1470; Dalton HWY 293.5mls pond. July 15,'88. W.T. 17.2°C, pH 6.7, Salinity 00.0%.

N-1471; Dalton HWY 293.3mls pond. July 15,'88.

N-1472; Dalton HWY 293.3mls narrow ditch. July 15,'88.

N-1473; Dalton HWY 288.5mls little stream. July 15,'88.

N-1474; Dalton HWY 287mls pond. July 15,'88.

N-1475; Dalton HWY Toolik L., Roadside pond. July 15,'88. *Tabelaria, Diatoma.*

N-1476; Toolik L., lake side small pond. July 15,'88. Pipetted from bottom sediments.

N-1477; Toolik L., lake side small pond. July 15,'88. Bottom muds. *Amphora.*

N-1478; Toolik L., Net sample. July 15,'88. W.T. 17.8°C, pH 7.5, Salinity 00.0%.

N-1479; Toolik L., Epilithic. July 15,'88. W.T. 17.8°C, pH 7.5, Salinity 00.0%.

N-1480; Pond No.10 island in the lake center. July 15,'88. W.T. 16.8°C, pH 8.14, Salinity 00.0%. Pipetted from sediments.

N-1481; Pond No.10. July 15,'88.

N-1482; Pond No.10. July 15,'88.

N-1483; Galbraith L. lake side little pond (1). July 15,'88. *Eunotia, Tabellaria, Pinnularia. Utricularia.*

N-1484; Galbraith L. lake side little pond (2). July 15,'88. *Utricularia.*

N-1485; Galbraith L. July 15,'88. Pipetted from sediments in the lake side. W.T. 16.6°C, pH 8.17, Salinity 00.0%.

N-1486; Galbraith L. July 15,'88. W.T. 16.6°C, pH 8.17.

N-1487; Grayling L. July 15,'88. W.T. 20.3°C, pH 7.5, Salinity 00.0%. *Epithemia.*

N-1488; Grayling L. Opposite side little pond. July 15,'88. Pipetted from sediments.

N-1489; Grayling L. Opposite side little pond. July 15,'88.

N-1490; Fairbanks, Smith L. July 18,'88. W.T. 20.0°C, pH 7.8, Salinity 00.0%. *Euglena.*

N-1491; Fairbanks, Smith L. July 18,'88. Blue-green algae.

N-1492; Fairbanks, Smith L. July 18,'88.

N-1493; Barrow, Elson L. July 22,'88. Piptted off lakeside sediments. W.T. 7.9°C, pH 8.3, Salinity 1.4%. *Chetoceros.*

N-1494; Barrow, Elson L. July 22,'88. *Navicula.*

N-1495; Barrow, Elson L. July 22,'88. *Amphora.*

N-1496; Barrow, Birnirk. July 22,'88. Pipetted from mass of bottom sediments. W.T. 10.2°C, Salinity 0.07%.

N-1497; Barrow, Birnirk. July 22,'88. Shallow-water stream. *Enteromorpha.*

N-1498; Barrow, Birnirk. July 22,'88. Moss squeezings from shallow-water pool. W.T. 13.8°C, Salinity 0.06%. *Pediastrum.*

N-1499; Barrow, Birnirk. July 22,'88. W.T. 13.8°C, Salinity 0.06%. *Pediastrum.*

N-1500; Barrow, Birnirk. July 22,'88.

N-1501; Barrow, Birnirk, Archaeology site. July 22,'88. Pipetted from bottom sediments.

N-1502; Barrow, Birnirk, Archaeology site. July 22,'88.

N-1503; Barrow, Birnirk, Moss squeezings. July 22,'88. *Amphora.*

N-1504; Barrow, Birnirk, Moss squeezings. July 22,'88. *Amphora.*

N-1505; Barrow, Birnirk, Moss squeezings. July 22,'88. *Amphora, Navicula, Pediastrum.*

N-1506; Barrow, Birnirk, Pipetted from bottom sediments. July 22,'88. *Navicula, Pediastrum.*

N-1507; Barrow, Birnirk, Moss squeezings. July 22,'88. *Amphora, Navicula, Nitzschia.*

N-1508; Barrow, Birnirk, Pipetted from bottom sediments in shallow stream. July 22, '88. *Amphora, Navicula.*

N-1509; Barrow, Birnirk, Shallow stream. July 22,'88. Green macroalgae.

N-1510; Barrow, Imikpuk L. July 22,'88. Pipetted from sediments. W.T. 5.5°C, pH 7.2, Salinity 0.02%. *Diatoma.*

N-1511; Barrow, Imikpuk L. July 22,'88. W.T. 5.5°C, pH 7.2, Salinity 0.02%.

N-1512; Barrow, Fresh Water L. July 22,'88.

N-1513; Barrow, Tundra pond (1). July 23,'88. Pipetted from bottom sediments.

N-1514; Barrow, Tundra pond (2). July 23,'88.

N-1515; Barrow, narrow river in tundra. July 23,'88. *Vaucheria*.

N-1516; Barrow, Tundra pond (3). July 23,'88. *Amphora, Navicula, Stauroneis*.

N-1517; Barrow, Tundra pond (3). July 23,'88. Epiphitic sample. *Eunotia, Bulbochaete*.

N-1518; Barrow, Tundra St. 2. July 23,'88. Pipetted from bottom sediments. *Navicula, Stauroneis, Pinnularia*, Desmids(*Closterium*).

N-1519; Barrow, Tundra St. 2. July 23,'88.

N-1520; Barrow, Tundra St. 2. July 23,'88. Squeezings from moss.

N-1521; Barrow, Tundra St. 3. July 23,'88. *Amphora, Eunotia, Stauroneis*.

N-1522; Barrow, Tundra St. 4 near G. W. July 23,'88. Pipetted from bottom sediments.

N-1523; Barrow, Foot print L. July 23,'88. Pipetted from bottom sediments.

N-1524; Barrow, Foot print L. July 23,'88. *Vaucheria*.

N-1525; Barrow, shallow river near IBP res. St. July 23,'88. *Vaucheria*.

N-1526; Barrow shallow river near IBP res. St. July 23,'88. Pipetted from bottom sediments. *Amphora, Navicula*.

N-1527; Barrow, pond of the IBP res. St. July 23,'88. Pipetted from bottom sediments. W.T. 8.2°C, pH 6.98, Salinity 0.36%. *Stauroneis, Navicula*.

N-1528; Barrow, pond of the IBP res. St. July 23,'88.

N-1529; Barrow, little pond near the IBP res. St. July 23,'88. *Eunotia, Navicula*.

N-1530; Barrow, little pond near the IBP res. St. July 23,'88. Pipetted from bottom sediments. *Amphora, Navicula*.

N-1531; Barrow, Solt Water L. July 23,'88. Pipetted from sediments.

N-1532; Barrow, Solt Water L. July 23,'88. *Entomoneis*.

N-1533; Barrow, Solt Water L. July 23,'88.

N-1534; Pt Barrow, Brownrish ice. July 24,'88. W.T. 0.9°C, Salinity 0.71%. *Coscino discus, Thalasiosira*.

N-1535; Pt Barrow, Sand from sea side. July 24,'88.

N-1536; Pt Barrow, little pond in sea side. July 24,'88. Pipetted from bottom sediments. *Entomoneis*.

N-1537; Pt Barrow, small pond of Elson L. side. July 24,'88. *Pediastrum*.

N-1538; Pt Barrow, Elson L. July 24,'88. Pipetted from sediments in coast of the

lagoon.

N-1539; Pt Barrow, small pond of Elson L. side. July 24,'88. Piptted off bottom sediments.

N-1540; Pt Barrow, Lagoon side pond. July 24,'88.

N-1541; Pt Barrow, Lagoon side pond. July 24,'88. *Amphora, Cymbella, Navicula.*

N-1542; Pt Barrow, Lagoon side pond. July 24,'88.

N-1543; Pt Barrow, Sea side pond, Nuwuk L. July 24,'88.

N-1544; Pt Barrow, Sea side pond, Nuwuk L. July 24,'88. *Entomoneis, Amphora, Navicula, Diploneis.*

N-1545; Pt Barrow, Lagoon side pond, foot of the sandbank. July 24,'88. Spherical colony of blue-green algae.

N-1546; Pt Barrow, Lagoon side pond. July 24,'88. Pipetted from bottom sediments.

N-1547; Pt Barrow, Lagoon side pond. July 24,'88. *Amphora, Navicula.*

N-1548; Firbanks, Smith L. July 25,'88. W.T. 19.9°C, pH 8.4, Salinity 00.0%.

N-1549; Firbanks, Smith L. July 25,'88. *Volvox.*

N-1550; Firbanks, Smith L. July 25,'88. *Vaucheria.*

N-1551; Harding L. July 26,'88. W.T. 17.4°C, pH 7.6, Salinity 00.0%.

N-1552; Harding L. July 26,'88.

N-1553; Harding L. July 26,'88. *Navicula, Amphora, Spirogira.*

N-1554; Birch L. July 26,'88. W.T. 19.1°C, pH 7.64, Salinity 00.0%. *Asterionella.*

N-1555; Birch L. July 26,'88.

N-1556; Quartz L. July 26,'88. W.T. 17.1°C, pH 8.34, Salinity 0.02%.

N-1557; Quartz L. July 26,'88.

N-1558; Doneli Dome. July 26,'88.

N-1559; Summit L. July 26,'88. W.T. 13.3°C, pH 7.8, Salinity 00.0%.

N-1560; Summit L. July 26,'88.

N-1561; Summit L. East side little pond. July 26,'88.

N-1562; Summit L. July 26,'88. *Vaucheria.*

N-1563; Paxson L. July 26,'88. W.T. 13.2°C, pH 7.6, Salinity 00.0%. *Coscinodiscus.*

N-1564; Paxson L. July 26,'88.

N-1565; Up Tangle L. July 26,'88. W.T. 14.7°C, pH 8.2, Salinity 00.0%. Net sample. *Asterionella, Coscinodiscus.*

N-1566; Up Tangle L. July 26,'88.

N-1567; Lower Tangle L. July 26,'88. W.T. 15.2°C, pH 7.26, Salinity 00.0%.

N-1568; Lower Tangle L. July 26,'88.

N-1569; Lower Tangle L. July 26,'88. *Vaucheria*.

N-1570; Lower Tangle L. July 26,'88.

Results

Diatoms from the vicinity of Barrow.

Centrales

Melosira distans (Ehr.) Ag.

M. varians Ag.

Thalassiosira simplex Hust. (Pl. 4. Figs. 1, 2).

T. pseudonana Hasle *et* Heimdal

Pennales

Achnanthes affinis Grun.

A. depressa (Cl.) Hust.

A. flexella (Kütz.) Brun. (Pl. 4. Figs. 19, 20)

A. haukiana Grun.

A. lanceolata (Brēb.) Grun.

A. marginulata Grun. (Pl. 4. Figs. 14, 15)

A. minutissima Kütz. (Pl. 4. Figs. 11, 12)

A. pseudoswazi Carter (Pl. 4. Figs. 17, 18)

Amphopra ovalis Kütz. var. *barrowiana* Patr. *et* Freese (Pl. 6. Fig. 39)

Cocconeis placentula Ehr.

Berkeleya rutilans (Trent.) Grun.

Caloneis bacillum (Grun.) Cl.

C. schumaniana (Grun.) Cl.

C. *silicula* (Ehr.) Cl.

Cymbella *cesatii* (Rabh.) Grun.

C. *cuspidata* Kütz.

C. *cistula* (Ehr.) Kirchner

C. *cymbiformis* Ag. (Pl. 6. Figs. 37, 38)

C. *ehrenbergii* Kütz.

C. *incerta* Grun.

C. *mesiana* Cholnoky

C. *norvegica* Grun.

C. *obscura* Krasske

C. *proxima* Reimer

C. *stauroneiformis* Lagerst.

Cymbella 2 spp.

Diatoma moniliforme Kütz. (Pl. 4, Figs. 5, 6)

Diploneis elliptica (Kütz.) Cl.

Didymosphenia geminata (Lyngb.) M. Schmidt (Pl. 3, Fig. M)

Epithemia adnata (Kütz.) Bréb.

E. *turgida* (Ehr.) Kütz.

Eunotia *arcus* Ehr.

E. *elegans* Østr. (Pl. 4. Fig. 9)

E. *exigua* (Bréb.) Rabh.

E. *lunaris* (Ehr.) Grun.

E. *occulata* Patr. *et* Freese.

E. *praerupta* Ehr. (Pl. 4. Fig. 10)

Fragilaria pinnata Ehr. (Pl. 4. Figs. 3, 4)

F. *construens* (Ehr.) Grun. var. *venter* (Ehr.) Grun.

F. sp.

Gomphonema acuminatum Ehr.

G. *gracile* Ehr.

G. *barrowiana* Patr. *et* Freese (Pl. 6. Fig. 41)

G. *parvulum* (Kütz.) Kütz.

Gyrosigma *spenceri* (W.Sm.) Grif. *et* Henf.

Meridion *circulare* (Grev.) Ag. (Pl. 4. Fig. 13)
Navicula *americana* Ehr. (Pl. 4. Fig. 22)
N. *amphibola* Cl.
N. *bacillum* Ehr.
N. *contenta* Grun.
N. *crucicula* (W. Sm.) Donkin (Pl. 5. Fig. 28)
N. *cryptocephala* Kütz.
N. *cuspidata* Kütz.
N. *digitoradiata* (Greg.) Ralfs
N. *elsoniana* Patr. *et* Freese (Pl. 6. Figs. 29, 30)
N. *freesei* Patr. *et* Freese
N. *gregaria* Donkin
N. *interglacialis* Hust. (Pl. 4. Fig. 21)
N. *laevissima* Kütz. (Pl. 5. Fig. 32)
N. *mutica* Kütz.
N. *peregrina* (Ehr.) Kütz.
N. *phyllepta* Kütz. (Pl. 4. Fig. 16)
N. *pupula* Kütz.
N. *pusilla* W. Sm.
N. *radiosa* Kütz.
N. *rhynchocephala* Kütz.
N. *salinarum* Grun. (Pl. 5. Figs. 25, 26)
N. *salsa* Patr. *et* Freese (Pl. 5. Figs. 23, 24)
N. *transistans* Cl. var. *kukensis* Foged (Pl. 5. Figs. 27, 28)
N. *tuscula* Ehr.
N. *veneta* Kütz.
N. *viridula* (Kütz.) Kütz.
N. 5 spp.
Neidium *affine* (Ehr.) Cl. var. *undulata* (Grun.) Cl.
N. *dubium* (Ehr.) Cl.
N. *hercynicum* A. Mayer (Pl. 6. Fig. 34)
N. *hichcockii* (Ehr.) Cl. (Pl. 6. Figs. 33)

N. *iridis* (Ehr.) Cl. var. *iridis*

N. *iridis* var. *ampliata* (Ehr.) Cl.

N. *ladogensis* (Cl.) Foged (Pl. 6. Fig. 35)

Nitzschia amphibia Grun.

N. *commutata* Grun.

N. *frustulum* (Kütz.) Grun.

N. *gandersheimiensis* Krasske

N. *levidensis* (W. Sm.) Grun. (Pl. 6. Fig. 40)

N. *linearis* W. Sm.

N. *palea* (Kütz.) W. Sm.

N. *sigma* (Kütz.) W. Sm.

N. 4 spp.

Pinnularia *barrowiana* Patr. *et* Freese

P. *birnirkiana* Patr. *et* Freese

P. *gibba* Ehr.

P. *lundii* Hust.

P. *microstauron* (Ehr.) Cl.

P. *nodosa* (Ehr.) W. Sm.

P. *steereana* Patr. *et* Freese (Pl. 6. Fig. 36)

P. *subrostrata* (Cl.) Cl.- Eul.

P. 3 spp.

Rhopalodia *gibba* (Ehr.) O. Müll.

Stauroneis *amphioxys* Greg.

S. *anceps* Ehr.

S. *phoenicenteron* (Nitz.) Ehr.

Surirella *brebissonii* Kram. et L. - Bertalot

S. *subsalsa* W. Sm.

Synedra *acus* Kütz.

S. *tabulata* (Ag.) Kütz. var. *tabulata*

S. *tabulata* var. *acuminata* Grun.

S. *ulna* (Nitz.) Ehr.

S. *vaucheriae* Kütz. (Pl. 6. Figs. 7, 8)

S. sp.

Tabellaria *fenestrata* (Lyngb.) Kütz.

T. *flocculosa* (Rabh.) Kütz.

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摘　要

アラスカ産珪藻類：南雲　保（歯学部，生物学教室）

この研究は海外学術調査，極域における微細藻類相調査の一環として行われた。

この調査において著者は1988年6月から7月にかけて，アラスカ各地のいろいろな水域から270の試料を採集した。

本報ではそれらの採集地点の概要を記すと共に，北米最北端のポイントバロー付近の水域から見いだされた126分類群の珪藻類を報告した。

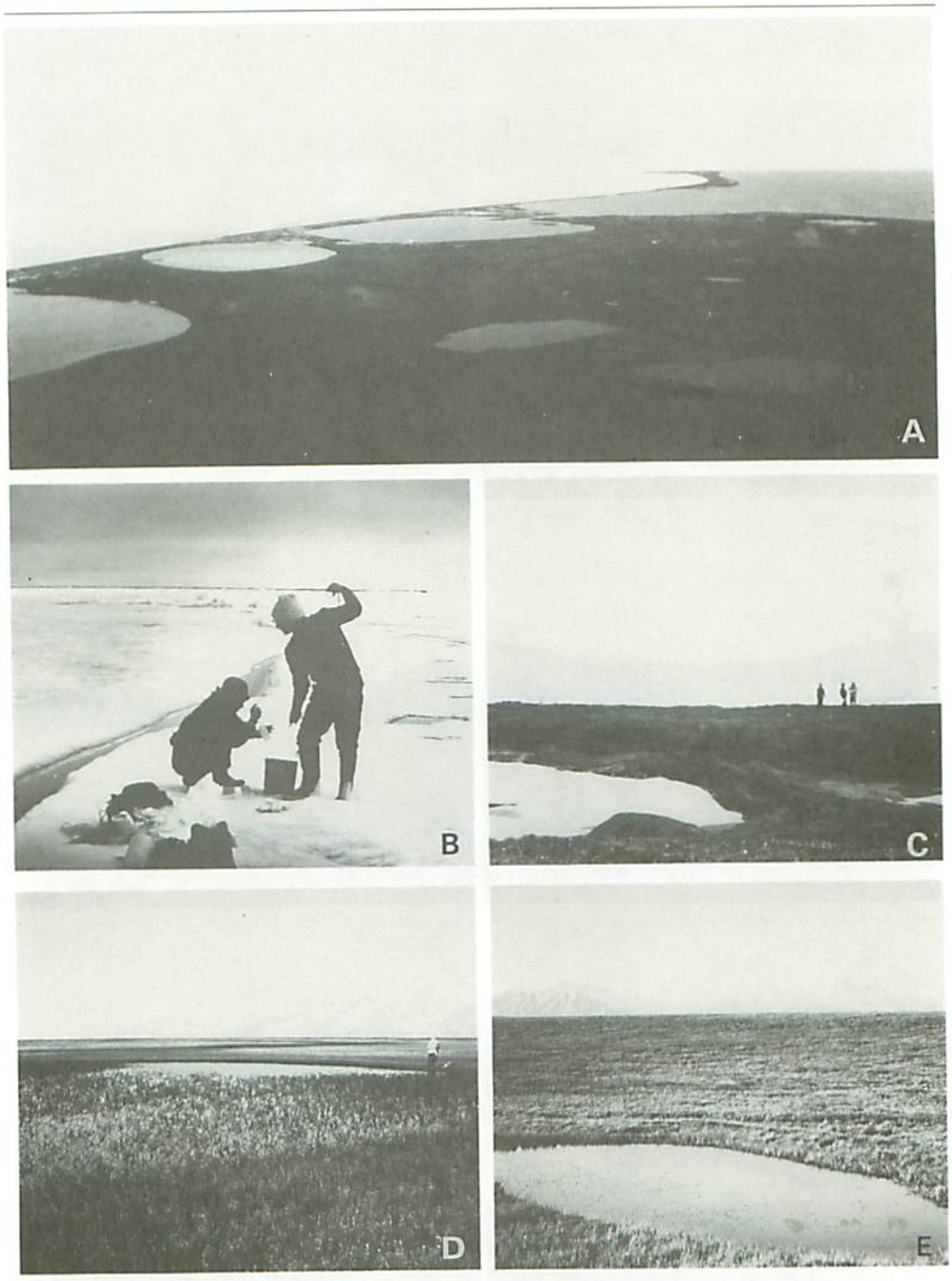

Plate 1. A. Bird's eye view of the vicinity of Barrrow (July 22,'88). B. Field works for phytoplankton sampling on thick ice (June 22,'88). Dr. I. Inouye(left) and Prof. E. Takahashi(right). C. Tundra at Pt Barrow (July 23,'88). D. IBP Station (July 23, '88). E. Tundra and a pond near Toolik Lake (July 15,'88).

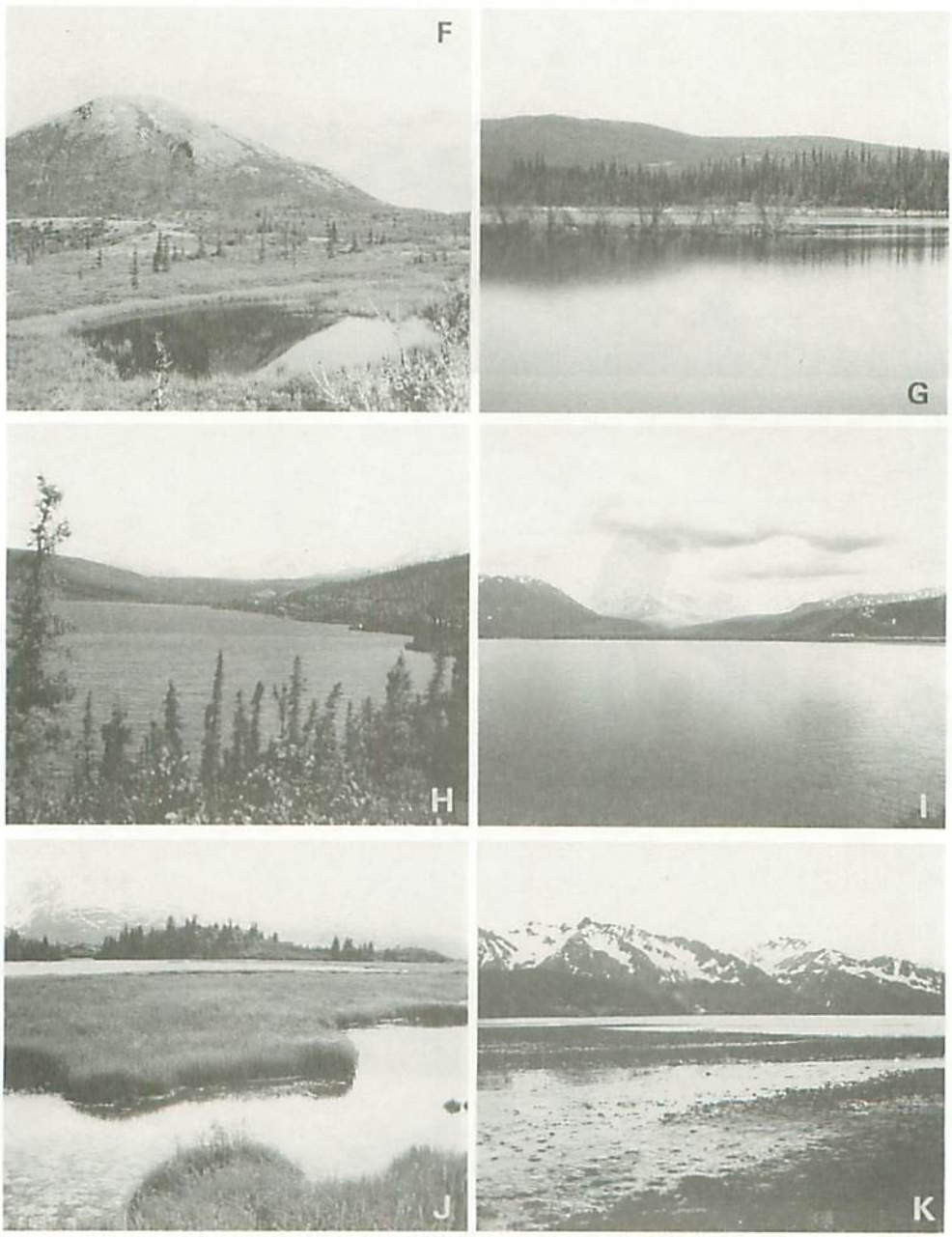

Plate 2. F. Mt. Donnelly Dome and lake (July 6,'88). G. Smith lake (July 4,'88) H. Paxon Lake (July 6,'88). I. Summit Lake (July 6,'88). J. Tern Lake (June 29, '88). K. Salt marsh at Seward in Kenai Peninsula (June 29,'88).

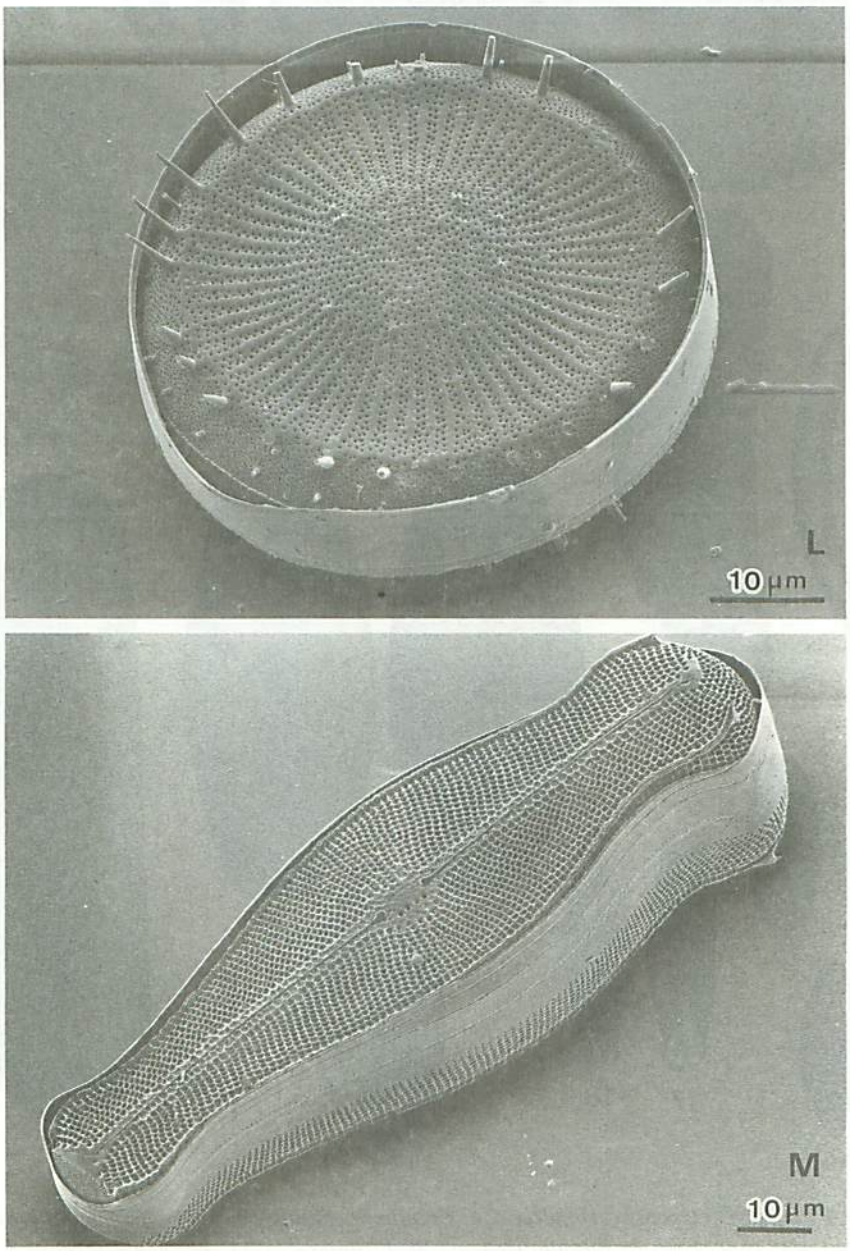

Plate 3. L. SEM. *Stephanodiscus niagarae* Ehr. (From Paxon Lake; No. N-1431). M. SEM. *Didymosphaenia geminata* (Lyngbye) M. Schmidt. (From Tangle Lake; No. N-1439).

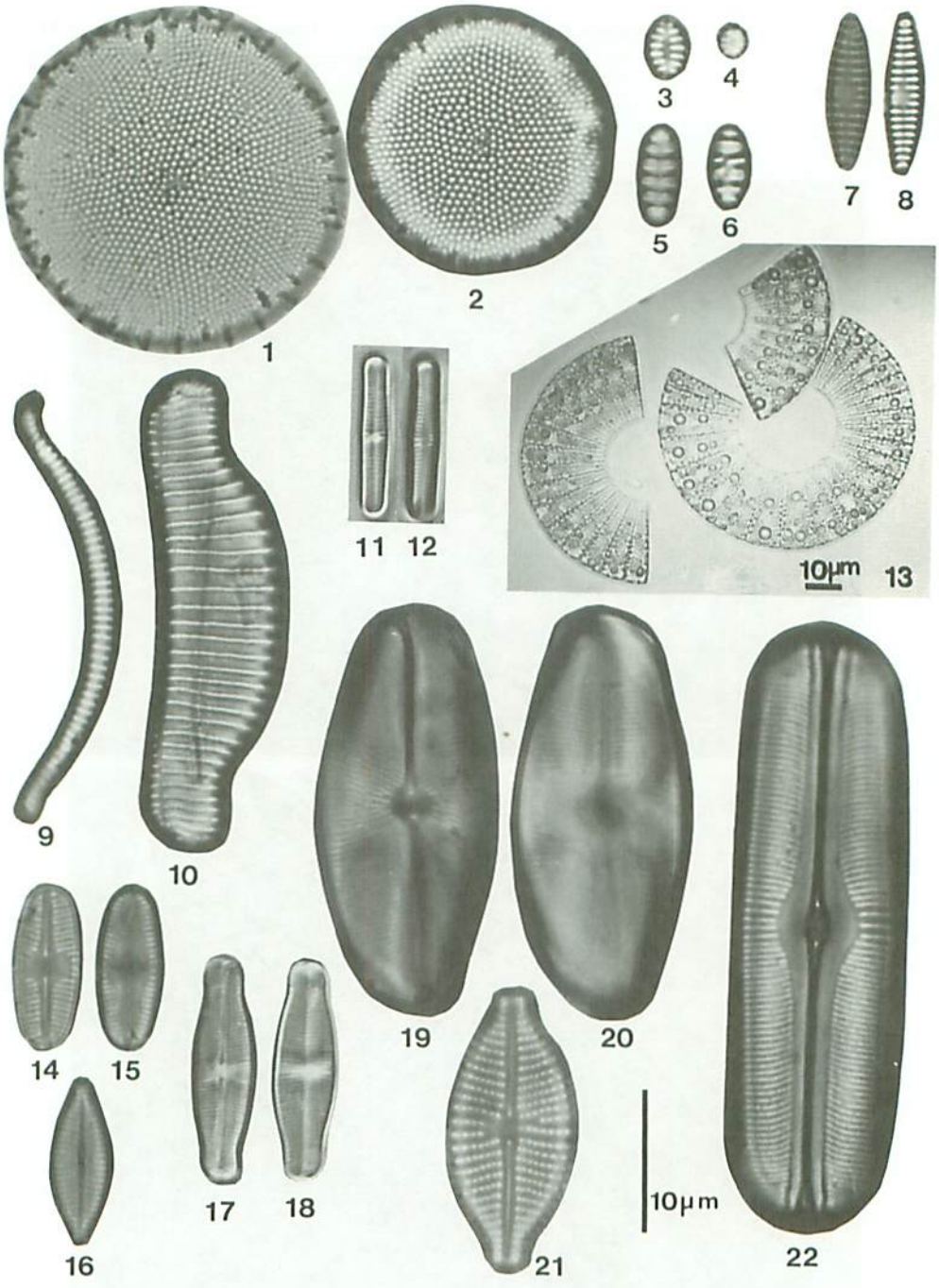

Plate 4. 1, 2. *Thalassiosira simplex*. 3, 4. *Fragilaria pinnata*. 5, 6. *Diatoma moniliforme*. 7, 8. *Synedra vaucheriae*. 9. *Eunotia elegans*. 10. *E. praerupta*. 11, 12. *Achnanthes minutissima*. 13. *Meridion circulare*. 14, 15. *Achnanthes marginulata*. 16. *Navicula phyllepta*. 17, 18. *A. pseudoswazi*. 19, 20. *Achnanthes flexella*. 21. *Navicula interglacialis*. 22. *N. americana*.

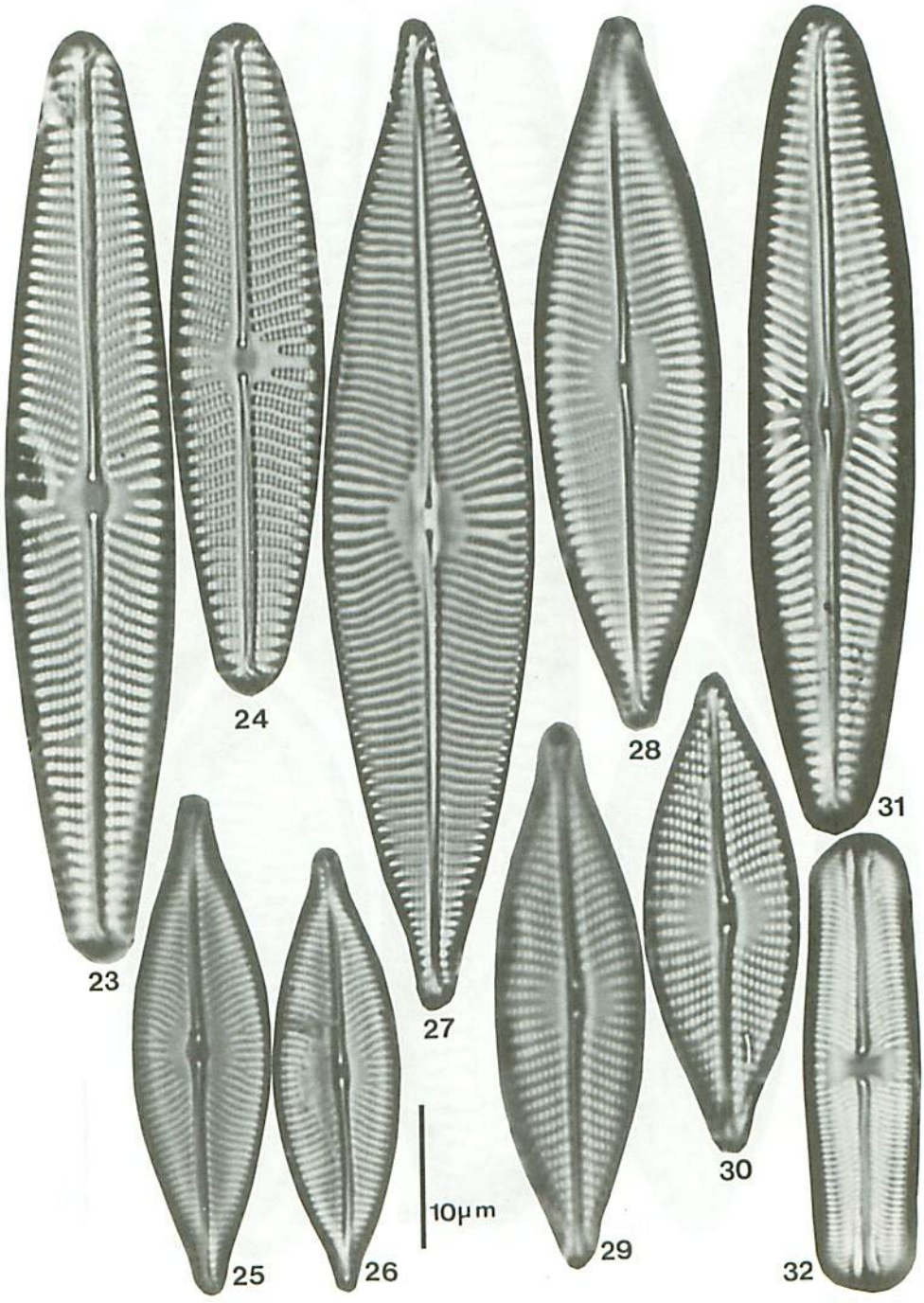

Plate 5. 23, 24. *Navicula salsa*. 25, 26. *N. salinarum*. 27, 28. *N. transistans var. kukensis*. 29, 30. *N. elsoniana*. 31. N. 32. *N. laevissima*.

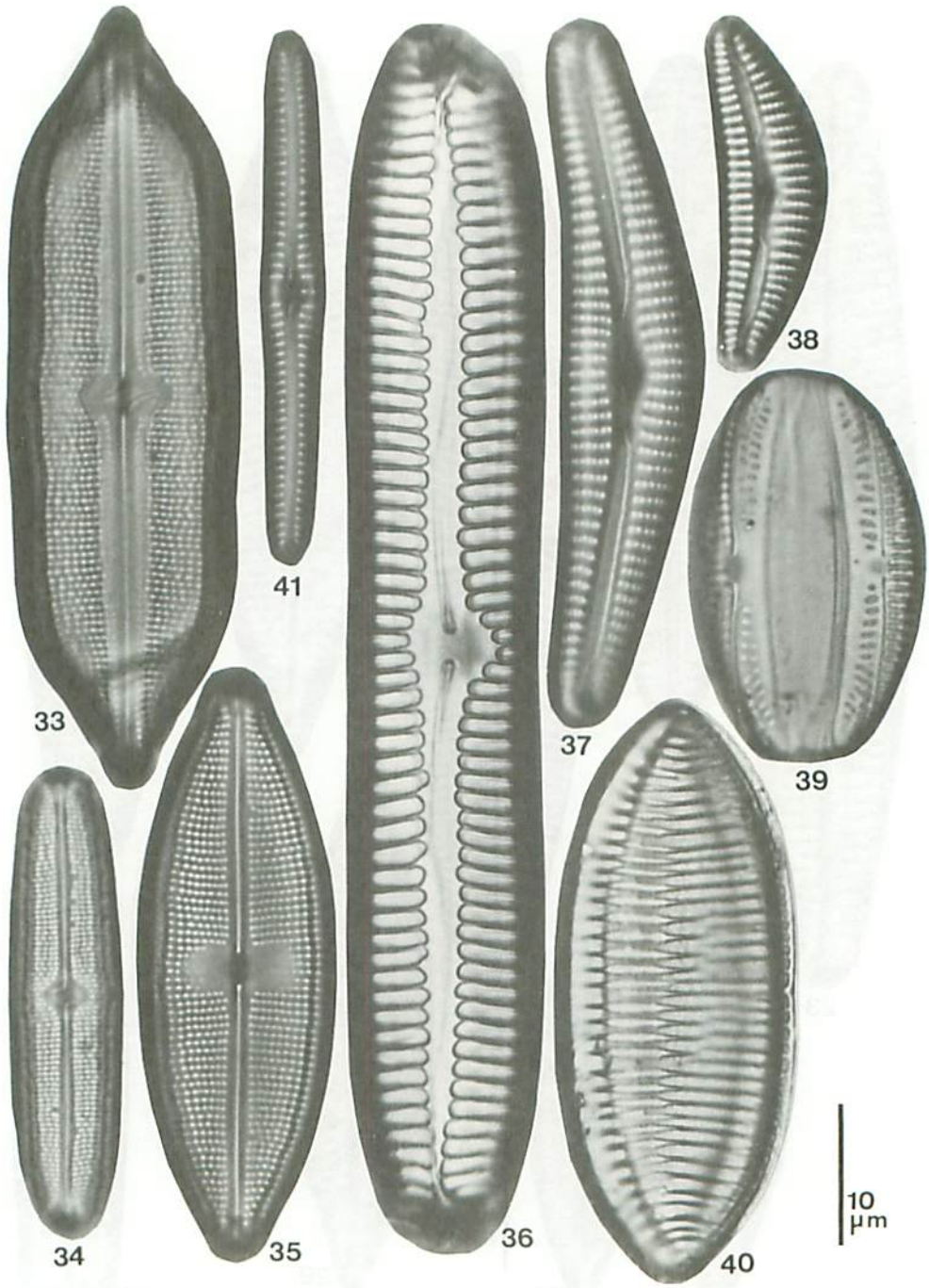

Plate 6. 33. *Neidium hichcockii*. 34. *N. hercynicum*. 35. *N. ladogensis*. 36. *Pinnularia steereana*. 37, 38. *Cymbella cymbiformis*. 39. *Amphopra ovalis* var. *barrowiana*. 40. *Nitzschia levidensis*. 41. *Gomphonema barrowiana*.